The Determinants of Product Innovation and Marketing Innovation Effecting to the Innovation Performance

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Abstract: Product innovation is critical to market development and affects innovation capability. Helping to promote the ability to operate in the era of the epidemic The objectives of this research were 1. To observe the factor of product innovation and marketing innovation effecting to the innovation performance. And 2. To study the relationship of product innovation and marketing innovation effecting to the innovation performance. This is based on the diffusion theory of innovation, technology acceptance model and Chocolate model. The target population in the food and beverage manufacturing sector found that SMEs in the food sector for 400 sample size. Results from factor analysis of product innovation, marketing innovation. and innovation performance found that fit index is chi-square=0.00, df=0, P-value=0.00, RMSEA= 0.00. Moreover, the casual analysis found that statistically significant relationship between latent variables in product innovation and marketing innovation and correlation to innovation performance. At least, there was also found statistically significant relationship between marketing innovation and inn. ovation performance. The overall fit index Chi-square=561.82, df=541, P-value=0.00, RMSEA=0.054. Recommendations, SME's hold develop new products that are different for each community enterprise. Especially in food groups, there must be differences in each community enterprise. Should develop food that can be stored for a long time, not easily spoiled. Add gimmicks such as history, history including creating modern packaging It has added value and is environmentally friendly.
Keywords: Product innovation, Marketing innovation, Innovation performance

1. Introduction

"Innovation", the hope, and survival of Thai businesses. The COVID-19 pandemic has had a severe, rapid, and widespread impact on the Thai economy at all levels and sectors. At the same time, "innovation" is what is commonly known as will help lead to the path of salvation of the Thai economy in the post-Covid world. Whether it is the Thailand 4.0 policy and the 20-year national strategy that focus on the restructuring of the Thai economy towards an innovation-driven economy (Innovation-driven Economy) for stable, prosperous, and sustainable growth (Thansettakij, 2021)

Investment situation in research,development and innovation in Thailand in the past. There is a continuous improvement trend. The results of the Global Innovation Index 2021 (GII 2021) by the world intellectual property Organization (WIPO), which ranks the innovation capability of countries around the world, Thailand ranks 43rd from a total of 132 countries improved one rank from the previous year to 3rd place in ASEAN after Singapore ($^{8th)}$ and Malaysia (36th), surpassing Vietnam, which is 44th in gross domestic expenditure figures. For research and development (Gross Domestic Expenditure on R&D: GERD), the results of a survey conducted by the Office of the higher education, science, research and innovation policy council (NHSO) together with the office of national research (NRCT) found that the value of Total investment 193,072 million baht, or 1.14% of GDP in 2019, an increase of 5.9% from the previous year.(Bangkokbiz, 2021)

Whether it is product development (product innovation) by launching new products or services. Or significantly improving the original product or service Including the improvement of the production process (Process Innovation), including service and transportation processes, etc. The results of the study found that Most Thai businesses do not have research or product/process improvement innovation (57.1 percent/59.4%), and very few Thai businesses do not have R&D but product/process innovation. (Thansettakij, 2021 and Bangkokbiz, 2021)

Overall, global agricultural and food trade in 2020 is worth $1.35 trillion. Foodstuffs with the highest trade value were vegetables, fruits, grains and meat, and the United States remained the world's No. 1 food exporter, while Brazil moved up to No. 3 in the world. the world from 5th place last year, while Indonesia. The world rankings improved two places, moving up to 11th place thanks to higher palm oil prices. and other food exports that expanded well, such as frozen shrimp, canned tuna, coffee, and cocoa. (Food Institute, 2021)

Moreover, A good product portfolio drives more growth and profits. Compared to services that can increase revenue but have a lower profit margin There are many reasons for this. For example, in many cases a product is more scalable than a service. Easier to use and easier to maintain This is why the service model as a product is so successful. Airbnb, Uber, Fivers can scale and make huge profits. They do not require close monitoring and interaction like other services. (Chummee (a), 2022 and Porunboiu, 2021)

Product innovations help companies grow, increase profits, and conquer new markets. There are many factors contributing to growth. And factors that get product innovation will reap long-term benefits.

When the market is saturated, and companies can't find a way out They can turn to product innovation. We'll explain how it works as we go through processes and frameworks, but in short, it's about creating new requirements.

The vague front-end of a new product development is the most important and creative part of the process. but often unstructured Deciding on an approach can give structure and efficiency to a process. This ultimately leads to time and cost savings. (Herman, 2020)

Whether you decide to use the wisdom of the crowd to collect new ideas and continually improve existing products. or looking for new opportunities that may lead to forward thinking having the tools to help you is essential to improving the process.

For SMEs looking to foster innovation from within, the answer is not limiting yourself to your organization. working together knowledge sharing and expanding your network will help fill your business with new ideas. and help improve your business growth opportunities. Of course, keep inside information private. But exposing yourself and your employees to external connections will increase your knowledge and exploration ideas. External connections can also provide unbiased feedback on your ideas. (Dollar and Sense, 2018 and Chummee (b), 2022)

Inside you can drive creativity and innovation by intellectually challenging yourself and your team. It's important that your team is challenging enough. Too few challenges will lead to boredom. But too much of a challenge can be stressful. Find a good balance to help them develop their creativity. (Dollar and Sense, 2018)

2. Objectives

1.To observe the factor of product innovation and marketing innovation effecting to the innovation performance.

2. To study the relationship of product innovation and marketing innovation effecting to the innovation performance.

3. Theories and Literatures reviews

A. Theory

The diffusion theory of innovation (DOI), developed by E.M. Rogers in 1962, is one of the oldest social science theories. It originated from communication to describe how over time. An idea or product gains momentum and spreads. How is it spread (or spread) through a specific population or social system? The result of this diffusion is People who are part of a social system adopt new ideas, behaviors, or products. Adoption means that a person does something different than they used to (for example, buy or use a new product or use a new product). The key to adoption is that the person perceives an idea, behavior, or product as something new or innovative. Diffusion is possible by this. (Boston university, 2019)

The adoption of new ideas, behaviors, or products (such as "innovation") does not occur simultaneously in society. Rather, it is a process where some people are more inclined to adopt innovation than others. Researchers found that early adopters of innovation It has a different character from those who later adopted innovations. when promoting innovation to the target population It is important to understand the characteristics of the target population that will help or hinder the implementation of innovation. There are five accepted user categories. And while most of the general population tends to fall into the middle category, but it is still necessary to understand the characteristics of the target population. when promoting innovation There are various strategies used to attract different types of users. (Boston university, 2019)

Following on the topic of opinions and attitudes affecting the adoption of innovation, Davis' (1985) Technology Acceptance Model (TAM) affirms that it is in fact the attitudes and expectations of the adopters of innovation that affect the opportunity for innovation. Implementation (Davis, 1985). Two key concepts in TAM are how potential users see innovations related to ease of use - how easily the innovations are learned and implemented - and Potential Benefits - The degree to which innovation will improve user personalization or Work-related performance (Straub, 2009). Of these two components, Davis believes that ease of use has a direct impact on perceived usefulness. This is because the more users perceive the innovations that can be used, the easier it is. The more likely they are to use it and experience higher performance. which proves to be beneficial to adoption (Davis, 1985). In a later study, Davis concluded that there was a higher correlation between perceived usefulness and technology adoption. rather than between recognizing the benefits and applying them. from the test results He predicted how easy the technology would be to learn. People won't admit it if they don't see it as a benefit to performance gains (Davis, 1989).

Chocolate model,these impact factors can be seen in Diane Dormant's latest model for adoption and change (Dormant, 2011). related to the organization There are four elements in this structure: change, adoption, agent of change, and organization – CACAO when created as an acronym for easy recognition and use for planning. Unlike Rogers' innovation diffusion theory, the Chocolate Model can be used to plan for organizational change and innovation adoption. The process flows as follows: First, analyze changes, whether new or innovative

(Dormant, 2011), similar to the first step in Rogers' (2003) adoption process. Change acceptance analysis Three, identify the

change agent. At this point, the plan is developed. The next step is to examine the organization that anticipates the change process. as well as a broader contextual analysis of organizational changes - their impact on other aspects. of the whole organization before proceeding. The plan may be revised based on the results of the organizational analysis (Dormant, 2011).

B. Literature reviews

Product innovation, a study by Frick et. al. (2020) explores the impact of concurrent and delayed product and process innovations on the productivity of dairy processors in the German market. The continuity of innovation variables and inputs was determined by measuring instruments. Although we could not find any positive effect of the patent or the number of new product launches in terms of efficiency. But we found that successful new products consistently had a positive effect on the technical performance of dairy processors. methodological Our results confirm the relevance of literature-based innovation outcome indicators as a differentiation measure of product innovation suitable for measuring the impact of innovation on stable performance. According to Chummee (C), 2022) found that an exploratory factor analysis of product innovation revealed that the element weight was greater than 0.50, consistent with the study ofDarmo (2021).This was found that product innovation and process innovation with innovation development processes to similar new products, which is to find new ideas from a variety of data collection sources, such as a joint brainstorming of stakeholders; collecting information from customers or competitors, etc., and then consider selecting new ideas. under different organizational conditions and strategies After that, the concept is developed into a prototype product for use in market testing with a group of customers to obtain suggestions for improvement to a complete product that can effectively meet the needs of customers

Marketing Innovationwas also found to have a positive direct correlation with export performance. According to a study by Murray, et. al., (2010), a study of 491 Chinese companies found a correlation between productivity and export performance. Statistically significant positive market and competitive advantage supported by the results of a study by Chummee (a) (b), 2022) which studies the transmission of SME's operators in Thailand. It was found that there was a statistically significant relationship between the paths. Because if there is marketing innovation, it will help promote and develop new products that affect the ability to export, create value, generate income, and profit that is good for the business. Expanding production to more countries.

Innovation Performance, according to a study by Hameed et al. (2021), the effectiveness of innovation includes the following key points: The company chose to participate in an open innovation model and believed that would be a way to commercialize the company's ideas. A collaborative effort with a number of outside organizations to work on projects in the mutual best interest of open innovation. The company chose to participate in an open innovation model. We believe that outsourcing will benefit your organization, new ideas and open innovations are always welcomed in your organization. and in your opinion Licensing of intellectual property is the best description of open innovation. Moreover, a study by Kobarg et. al. (2019) found that 218 German companies demonstrated a strong correlation between cooperation and innovation efficiency. as well as cooperation and efficiency of innovation for cooperation.

4. Research Methodology

A. Population and Sample sizes

The target population in the food and beverage manufacturing sector found that SMEs in the food group were the largest number of 58,707 cases (SME, 2019). Yamane with a 5% expectancy of 397 samples was obtained, and was based on the Hair (2010) guidelines suggesting a sample size of at least 100 samples or a proportion of sample size of at least 10. -20 times the observable variable Therefore, in this research, there were 35 observable variables when multiplied by 10 times the observable variable. A total of 350 samples will be obtained. Moreover, Wiratchai (1999) suggested that the ideal sample should be 400. For this reason, in order to prevent missing data errors, the researcher proceeded. A total of 400 samples were collected by collecting samples in the Bangkok metropolitan region.Moreover, researcher defines a specific sampling method.

B. Research tool

This research used questionnaires to collect data. It consists of a 7-part questionnaire structure, a questionnaire formation process, and a review of the research tool quality.

C. Validity test

The results of the questionnaire quality examination in terms of content validity, questionnaire coverage Suitability and clarity of use Language from 5 experts found that the consistency value is between 0.50 - 1.00 which meets the criteria. Therefore, every question in the questionnaire is consistent between the question and the objectives of the research to be measured are accurate in the content and have clarity of language and cover the content that the researcher wants to study can therefore be used to collect data for both researchers Has made improvements to the questionnaire according to the issues that experts advise, such as adding a subject to the

question sentence. Fixed unofficial language correct the words to be appropriate. The confidence value of the whole questionnaire was 1.00.

D. Reliability test

Reliability was checked using Nunnally's criterion alpha coefficient (1978, p. 245) indicating that the variable's alpha coefficient must be greater than 0.70. All variables with an alpha coefficient greater than 0.70 met the acceptable criteria.

5. Results

A. Descriptive Analysis

Analysis of the percentage of small and medium-sized businesses in the food sector found that the top two numbers of employees were 201-300 employees, with 161 employees, as well as 301-400 employees, followed by employees. From 1-100 people, 15 people accounted for 3.8 percent, and the last rank was 6 employees from 401-500 people, accounting for 1.6 percent.

In terms of education, it was found that there were 330 graduates (82.5%), followed by 66 graduates (16.5%), and graduated. Below bachelor's degree, there are 4 persons, representing 1.0 percent.

The analysis of the percentage of age found that the sample was aged 41-50 years, the largest number reached 255, representing 63.7 percent, followed by the age between 31-40 years, with 68 cases, representing 17 percent. The third was aged 51-60, with 58 cases, accounting for 14.5 percent, fourth was aged 20-30, with 16 cases, accounting for 4 percent, and third was aged over 61, with 3 cases. accounted for 0.8 percent

In terms of English proficiency, the data analysis revealed that the largest number of respondents did not say whether they could speak or not, at 384, representing 96 percent, followed by not being able to speak English at 12, representing a hundred. per accounted for 1.0%. As for the type of business, it was found that 388 operators in the food group were 97%.

B. Factor Analysis

The results of an exploratory factor analysis of the five product innovation variables in question were able to distinguish two component weights, and found that they had component weights between 0.920-0.671, eigenvalues of 2.202 and 1.550, and a total cumulative percentage of 75.042. It also has a KMO. 0.660, Chi square 802.72, df 10.Consistent with the confirmatory analysis results, the t-value greater than 2.00 and the conformance index passed the following criteria: chi-square 0.00, df=0, P-value=0.00, RMSEA= 0.00.

The results of the exploratory factor analysis of the five marketing innovation variables were divided into two components of the questionnaire weighting, and all of the questions passed the required minimum criteria. with a composition weight between 0.745-0.930, eigenvalue 2.473 and 1.217, with a total cumulative percentage of 73.800, including a KMO. 0.608, Chi Square 654.74, df 10.Consistent with the confirmatory analysis results, the t-value greater than 2.00 and the conformance index passed the following criteria: chi-square 0.00, df=0, P-value=0.00, RMSEA= 0.00.

The results of the exploratory factor analysis of the five innovation performance questions were categorized as one component weighting, with component weights between 0.704-0.886, except for the Inno4 component, the number of innovations under intellectual property protection was valuable. The composition weight is less than 0.50, the researcher has eliminated this question from the analysis in the next step. Moreover,theeigenvalue of 2.495 and a cumulative percentage of 49.908 and found that KMO 0.714, Chi square 545.13, and df. 10.Consistent with the confirmatory analysis results, the t-value greater than 2.00 and the conformance index passed the following criteria: chi-square 0.00, df=0, P-value=0.00, RMSEA= 0.00.

C. Casual Analysis

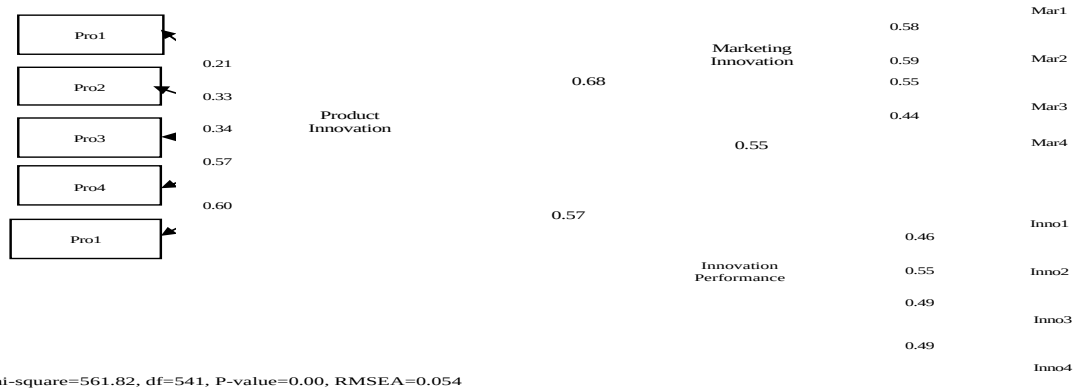

Figure 1: Casual Analysis

From figure 1, it was found that there was a statistically significant relationship between latent variables in product innovation and marketing innovation (b=0.68, t=11.4). A statistically significant correlation to innovation performance was also found (b=0.57, t=9.07).It was also found that there was a statistically significant relationship between marketing innovation and innovation performance (b=0.55, t=2.73).Moreover, it was found that the compound weight of the external latent variable of product innovation to the external observable variable was between 0.21-0.60, and the internal latent variable of the marketing innovation to the internal observed variable had the factor loading weight between 0.44-0.59.Finally, the latent innovation performance internal variable to the internal observable variable has an element weight between 0.46-0.55.

D. Direct and indirect relation

Table 1: Direct and Indirect effect

Relation	Direct	Indirect	Total effect
Product innovation-Marketing innovation	0.68	0.37	0.25
Product innovation-Innovation performance	0.57	-	0.57
Marketing innovation-Innovation performance	0.55	-	0.55

From table 1, it was found that there is a direct relationship between product innovation to marketing innovation, product innovation to innovation performance and between marketing innovation to innovation performance. Moreover, there is an indirect relationship between product innovation to innovation performance through indirect relationship via marketing innovation.

6. Discussion and Recommendation

A. Discussion

According from the figure 1, from the relation between product innovation to marketing innovation, there is a positive direct relationship. Consistent with the study of Ramirez et. al. (2018), there was a statistically significant correlation, proving the hypothesis and that correlation. Consistent with the study of Balakrishna (2015) found a statistically significant correlation between product innovation and market innovation as product innovation enhances market innovation capability. Because product innovation is product design to respond to consumer needs. This enhances marketing capability and marketing innovation. by relying on marketing innovations to promote each other.

Likewise, the correlation path between product innovation and innovation performance was statistically correlated, consistent with a study by Atalay et., al.(2013) Innovative capabilities such as product design to be modern Add the history of the product that can be read from the QR code, etc.

Ultimately, the relationship path between marketing innovation and innovation performance was found, consistent with a study by Chummee (D)(2021),that found that relationship fostered innovation talent. Marketing innovations may include assisting distribution through social media. including metaverse marketing promotion, etc.

B. Recommendation

For SME's, develop new products that are different for each community enterprise. Especially in food groups, there must be differences in each community enterprise. Should develop food that can be stored for a long time, not easily spoiled. Add gimmicks such as history, history including creating modern packaging It has added value and is environmentally friendly. Moreover, the development of new marketing channels must also be undertaken, such as promoting social media marketing both nationally and globally. Contactless in-store sales including developing new customer reach channels such as metaverse marketing.

for policy and country level access to funding sources should be developed. Encourage entrepreneurs to operate their business continually while maintaining their own uniqueness. Promote global marketing for community enterprises including opening new markets for entrepreneurs Moreover, the uniqueness of the local area must be promoted.

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